LLNL Environmental Restoration Division (ERD)
Standard Operating Procedure (SOP)

# ERD SOP 4.1: General Instructions for Field Personnel—Revision: 6

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ENVIRONMENTAL RESTORATION DIVISION
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ERD

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## 1.0 PURPOSE

The purpose of this SOP is to provide general instructions to all Livermore Site and Site 300 personnel concerning activities required to be performed before, during, and after field investigations. These instructions are to ensure that field personnel understand the site, the objective and schedule of the field program, their authority, and their responsibilities.

## 2.0 APPLICABILITY

These instructions apply to all field personnel who conduct work at Site 300 and the Livermore Site for the ERD.

## 3.0 REFERENCES

3.1 V. Dibley (1999), Quality Assurance Project Plan Livermore Site and Site 300 Environmental Restoration Projects (UCRL-AR-103160 Rev. 2).

3.2 Site Safety Plan for Lawrence Livermore National Laboratory CERCLA Investigations at Livermore Site, July 2000 (UCRL-21174 Rev. 2).

3.3 Site Safety Plan for Lawrence Livermore National Laboratory Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Investigations at Site 300, November 2000 (UCRL-21172 Rev. 3).

3.4 ERD Operations and Maintenance (O&M) Manuals.

3.5 Operational Safety Procedures (OSPs).

3.6 Integration Work Sheets (IWSs).

3.7 Lawrence Livermore National Laboratory (LLNL) Environment, Safety and Health Manual.

3.8 Lawrence Livermore National Laboratory (2002), Site 300 Field Contractor Help Guide (UCRL-ID-148438).

## 4.0 DEFINITIONS

See SOP Glossary.

## 5.0 RESPONSIBILITIES

### 5.1 Division Leader

The Division Leader's responsibility is to ensure that all activities performed by ERD at the Livermore Site and Site 300 are performed safely and comply with all pertinent regulations and procedures, and provide the necessary equipment and resources to accomplish the tasks described in this procedure.

### 5.2 Site Safety Officer (SSO)

The SSO in consultation with the LLNL Hazards Control Department will designate the appropriate level of personnel protective equipment (PPE) for the field personnel to safely accomplish their work.

### 5.3 Sample Coordinator (SC)/Drilling Coordinator (DC)/Subproject Leader (SL)

The SC, DC, or SL are responsible for providing Field Personnel with a sampling or work plan/schedule. In addition, the SC, DC, or SL will provide field personnel with enough information to perform the work safely and correctly. This information should include what operational and safety procedures are applicable to the work being tasked.

### 5.4 Functional Area Supervisor (FAS)

An FAS is responsible for being aware of the status of operations in their area and how they might impact persons requesting permission for restricted travel.

### 5.5 Field Personnel

Field personnel are responsible for the safe completion of assigned tasks as described in the ERD SOPs, Site Safety Plan (SSPs), OSPs, O&M Manuals, IWSs QAPPs, and appropriate LLNL ES&H Manual procedures. They are required to document the work performed and to alert their immediate supervisors of any variances from procedures established in the above documents.

## 6.0 PROCEDURE

### 6.1 Training

All ERD Personnel have a training plan which is required by their administrative supervisor's completion of a training questionnaire. The LLNL system "LTRAIN" tracks the training the LLNL personnel have completed and those courses required. ERD personnel working on the CERCLA clean-up require 40 hr SARA/OSHA with an annual refresher and 3-day on-the-job-training field experience. ERD personnel working at Site 300 require HS0095-W, "Safety for Employees and Visitors at Site 300." All personnel should periodically check their LTRAIN file and ensure their training is up-to-date.

*Personnel are only to perform work for which they have been trained.*

### 6.2 Activities to be Performed Before Field Work

#### 6.2.1 Document Review

Document review should be performed prior to commencement of field activities. At a minimum the following list of documents should be reviewed:

- Sampling or work plans/schedules. The Sampling or Work Plan/Schedule should contain sufficient detail to allow the proper completion of work. The sampling plan should include sample collection method, required sample analysis, and analytical laboratory.
- SSP, applicable OSPs, and IWSs. The responsible SC, DC, or SL should provide field personnel with the safety procedures that are applicable to the work being tasked. *OSPs and IWSs should be reviewed with field personnel and documented, as applicable*.
- Applicable SOPs. The responsible SC, DC, or SL should direct field personnel to the SOPs that are applicable to the work being tasked. *Work should be performed to controlled SOPs only*. This ensures that the SOPs are the most up-to-date version.
- O&M Manual.
- Equipment owner/operator instructions.
- Site maps.

- Site documentation. For drilling activities, site data should be reviewed to estimate key parameters (i.e., sample target zones, depth, thickness, types of contaminants) and determine if proposed borehole location is clear of underground utility lines.
- Integration Work Sheets (IWSs). Ensure that the work is covered by an IWS.

### 6.2.2 Coordinate Schedules

- Arrange access to work sites. Periodically, portions of Site 300 are closed to access due to hazardous operations. The HS0095-W course provides instructions concerning entry into restricted areas. If a restricted area is encountered during the course of the field work *it is forbidden to go around a closed gate. This could result in physical injury*. The field personnel, SC, or SSO makes arrangements with the appropriate FAS for access into areas prior to field personnel conducting work. The FAS must give approval prior to entering. In addition, if drilling is to occur on private property, authorization must be received in writing prior to entrance.
- Sign-in board (Site 300 only). All personnel visiting Site 300 must log in and out on the sign-in board located inside Trailer 8726. Write your name, time of arrival, destination and estimated time of return on the board. Obtain a communications radio from the charger and place the magnetic tag onto the board indicating which radio will be used in the field. DO NOT leave the site without removing your name from the board and returning the radio (along with the magnetic tag) to the charger.
- Radio and/or radio identification names. A radio communications course (HS5606-W) must be taken prior to conducting work at Site 300. An off-road driving course (Driving the Site 300 Fire Trails, EP8064-003) is also necessary when performing work that requires driving off the paved roadways. Contact the SSO to determine if the driving course is needed to carry out a specific work assignment. A communications radio must be carried by field personnel to contact the appropriate individuals for guidance, assistance and in case of emergencies. Make sure the radio is fully charged, as indicated by the green light on the charger. Access approval must be obtained from the appropriate FAS prior to requesting permission from the Control Point Officer to perform work that requires traveling or hiking more than 50 feet off pavement. Request permission for off-road travel during normal working hours by contacting Safeguards & Security on your communications radio (call sign "MIKE"). MIKE can also be contacted by phone at 3-5222 when requested to do so or if radio becomes inoperable. You must also notify "MIKE Com" when you return to the paved road. Radios must be kept on and monitored for the duration of field activities.
- Coordinate escorts. The Administrative Escort Services must be given a 24-hour notice when an escort is required to accompany field personnel in restricted areas.
- Arrange LLNL vehicle usage.
- Coordinate field support. At the Livermore Site, tankers and drums containing purge water may not be left at the well location, therefore, the SC may provide a specific order of wells to be sampled.

- Contact Site Planning/Plant Engineering. For Livermore Site drilling activities, Site Planning should be notified at least 2 weeks prior to performing drilling. For Site 300, Plant Engineering must approve drilling location.
- Acquire surveys/permits. Acquire any boring or well drilling permits required by state or local authorities. At Site 300, ecological and archeological surveys must be conducted within 60 days prior to drilling to check for cultural resources and endangered species at the drilling location if at a previously undisturbed site.

### 6.2.3 Assemble Materials/Equipment

- Obtain the appropriate logbook and field data collection forms. Refer to SOP 4.2, "Sample Control and Documentation" or the appropriate SOP or O&M.
- Assemble the appropriate supplies and/or equipment. Attachment A provides a general equipment checklist. Specific equipment checklists are provided in the applicable SOPs when necessary. If the sampling container and preservation requirements are not specified on the Ground Water Sampling Data Sheet, refer to SOP 4.3, "Sample Containers and Preservation," the SC, or a QC Chemist. Before sampling Site 300 monitor wells, field support personnel must ensure that wells have sufficient collection drums available at the well head for purge water containment. For drilling, the source of water to be introduced into the borehole or well must be approved by the DC or QC Chemists.
- Don appropriate field attire. Certain work conditions, such as sampling contaminated environmental media, may require various levels of PPE depending on the potential hazard to workers. Attachment B displays appropriate PPE for various levels of protection. Generally, field work only requires PPE Levels C and D. Field personnel should contact the SSO before starting any new field work or if uncertain about the level necessary to safely conduct field work. The LLNL Hazards Control Department makes the final determination of the appropriate level of PPE. *Do not conduct any field work if the original level of PPE is believed to be insufficient and contact the SSO.*
- Perform equipment maintenance, calibration, or calibration verification. The procedures are described in SOP 4.8, "Calibration, Verification, and Maintenance of Measuring Test Equipment (M&TE)."

## 6.3 Activities to be Performed During Field Work

### 6.3.1 Perform Work

- Perform work. Work should be performed as directed by the Sampling or Work Plan/Schedule and as described by the appropriate SOPs. Work not defined in site-specific sampling plans is not to be initiated without approval of the SC, DC, or SL. Modifications to the work plans that may be required must be approved by the appropriate SC, DC, or SL and documented.

- Stop work. If violations to procedures or applicable health and safety requirements are observed, the field personnel should *stop work immediately* and notify their direct supervisor and/or the SSO. **Anyone can stop work if they believe operations are unsafe.**

### 6.3.2 Monitor Work

- Monitor work environment. Visually monitor working environment continually to ensure safety. Instrumentation should be used when specified by the applicable SOP, SSP, or SSO. Field blanks should be collected when designated by the sampling plan or if there is any reason to suspect air-borne contaminants (i.e., odors, dust, work being performed near by such as painting, fumigating, etc.). Refer to SOP 4.9, "Collection of Field QC Samples." All observations which can affect sample quality should be recorded in appropriate logbooks and/or field sheets.
- Monitor equipment. Equipment should also be monitored for contamination and decontaminated when necessary per SOP 4.5, "General Equipment Decontamination." Equipment blanks (rinsate samples) should be collected when designated by the sampling plan or if there is any reason to suspect potential cross-contamination. Refer to SOP 4.9, "Collection of Field QC Samples." In addition, follow SOP 4.9 whenever portable purging or sampling equipment is used.

### 6.3.3 Document Work

- Document work. Record all pertinent information in the appropriate logbook and field form as required by SOP 4.2 and in accordance with applicable SOPs as work progresses.
- Well entries. Access to wells for any reason must be documented in the Well Entry Logbook.
- Nonconformances. Document any problems encountered during operations on a Quality Improvement Form (QIF) per the instructions provided in SOP 4.12.

## 6.4 Activities to be Performed After Field Work

### 6.4.1 Clean-up Work Site and Equipment

- Decontaminate equipment. Decontaminate equipment per SOP4.5, "General Equipment Decontamination."
- Dispose of waste properly. Waste should be disposed of in compliance with Hazardous Waste Management (HWM) requirements. Sampling and Drilling wastes should be disposed of per SOP 1.8, "Disposal of Investigation-Derived Wastes (Drill Cuttings, Core Samples, and Drilling Mud)". Consult with the appropriate HWM representative or Operations and Regulatory Affairs environmental analyst when in doubt.
- Inventory sampling equipment and supplies. Repair or replace all spent, broken or damaged equipment. Return equipment to proper storage area and report incidents of

malfunctions or damage. If well equipment is missing or damaged or there are other problems at the well site, a Well Maintenance Form should be initiated per SOP 2.12, "Ground Water Monitor Well and Equipment Maintenance."

- Mark borehole or sampling location (when applicable). Durably mark borehole or sampling location with visible identification (ID) to allow survey team to locate and survey location. Place temporary cover over borehole as appropriate.

### 6.4.2 Review Documentation

- Check that all field data is properly recorded. Logbooks, CoCs, and field data collection forms should be filled out as required by SOP 4.2 and applicable ERD SOPs. Cross-check samples collected with the sampling or work plan. Note discrepancies. Check sample labels for accuracy.
- Deliver forms and logbooks. Return logbooks to the appropriate storage location (i.e., at the facility, with the piece of equipment, to the SC or Data Management Team [DMT]). Provide the original COC to the DMT and a copy to the Technical Release Representative. File, copy, and deliver the data collection forms as appropriate. The SC should receive field data collection forms daily.

### 6.4.3 Dispatch Samples (when applicable)

- Notify analytical laboratory. Laboratory capacity should be checked before shipping samples that are collected before holidays and with short holding times and quick turnaround times to ensure laboratory personnel are available.
- Package and ship samples. Handle, package, and ship samples as directed in SOP 4.4, "Guide to the Handling, Packaging, and Shipping of Samples."

### 6.4.4 Store Core Samples (when applicable)

- Store core. Store recovered sediment and rock core per instructions described in SOP 1.15, "Well Site Core Handling."

## 7.0 QA RECORDS

7.1 Field Data Collection Forms
7.2 Document Control Logbooks
7.3 CoCs

## 8.0 ATTACHMENTS

Attachment A—Equipment Check List

Attachment B—Personnel Protective Equipment List

# Attachment A

# Equipment Checklist

# EQUIPMENT CHECK LIST

The purpose of the list presented below is to aid field personnel in identifying those supplies necessary to conduct a particular field operation. It is not intended to be all inclusive. It is the responsibility of field personnel to determine and obtain the supplies required for successful performance of assigned tasks.

____ Air tight plastic bags
____ Any necessary packaging (i.e., bubble wrap)
____ Any necessary protective equipment required by Hazards Control Department
____ CoC forms
____ Field sheets
____ Sample containers (see SOP 4.3)
____ Shipping forms
____ Site Safety Plan
____ Barricades
____ Blue ice or bagged ice
____ Calculator
____ Camera (authorized personnel only)
____ Caution tape
____ Clipboard
____ Cold weather gear
____ Coolers
____ Distilled (organic-free) water
____ Drinking water
____ Duct tape
____ Ear plugs
____ First aid kit
____ Flagging
____ Hand lens
____ Hard hat
____ Hat
____ Health and Safety Plan
____ Lath/stakes
____ Overshoes
____ Organic Vapor Analyzer (OVA) and/or photoionization detector (PID)
____ Pens, pencils, permanent markers
____ Preprinted labels
____ Protractor
____ QAPPs
____ Radio
____ Rain suit (if necessary)
____ Safety shoes/boots
____ Sampling, field, or facility logbook
____ Sampling Plan
____ Snake guards
____ SOPs
____ Sample preservative
____ Stop watch
____ Sun screen
____ Tape measure (tenths)
____ Tool box
____ Water-level indicator
____ Well Specification Table
____ Work gloves/sampling gloves

# Attachment B

# Personnel Protective Equipment

## Personnel Protective Equipment[a]

| Level A | Level A Protection |
|---|---|
| Should be worn when the highest level of respiratory, skin, and eye protection is needed. | Supplied-air respirator (MSHA/NIOSHA approved)<br>Fully encapsulating chemical-resistant suit<br>Coveralls (optional)<br>Long cotton underwear (optional)<br>Gloves (inner and outer), chemical resistant<br>Boots, chemical resistant<br>Hard hat (optional)<br>Disposable gloves and boot covers (optional)<br>Cooling unit (optional)<br>Two-way radio communications (optional) |
| **Level B** | **Level B Protection** |
| Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. | Supplied-air respirator (MSHA/NIOSHA approved)<br>Self-contained breathing apparatus<br>Chemical resistant clothing<br>Long cotton underwear (optional)<br>Coveralls (optional)<br>Gloves (inner and outer), chemical-resistant<br>Boots (outer), chemical-resistant, steel toe and shank<br>Boot covers (outer), chemical resistant<br>Hard hat (face shield) (optional)<br>Two-Way radio communications (optional) |
| **Level C** | **Level C Protection** |
| Should be worn when the criteria for using air-purifying respirators are met. | Air-purifying respirator, full-face, canister equipped (MSHA/NIOSHA approved)<br>Chemical-resistant clothing<br>Coveralls (optional)<br>Long cotton underwear (optional)<br>Boots (outer), chemical resistant, steel toe and shank<br>Boot covers (outer) (optional)<br>Hard hat (face shield) (optional)<br>Escape mask (optional)<br>Two-way radio communication (optional) |
| **Level D** | **Level D Protection** |
| Should be worn only as a work uniform and not on any site with respiratory or skin hazards. It provides no protection against chemical hazards. | Coveralls<br>Gloves (optional)<br>Boots/shoes, leather or chemical-resistant<br>Safety glasses/chemical splash goggles (optional)<br>Hard hat (face shield) |

[a] Hazards Control along with ERD personnel will decide which level of PPE to use for the safety of field personnel.